

**WHAT is CLAIMED.**

1). A cyclone separator suitable for variable fluid flow rates, for separating solid particles dispersed in a fluid, comprising a closed recipient superiorly closed by a lid provided with an inlet for the fluid including the solid particles and an outlet for the fluid purified of the solid particles, the recipient having a truncoconical wall converging in a downwards direction, at a narrow end of which there is a discharge which can be connected to a container in which the solid particles are collected, and above which an outlet conduit is located for outletting the fluid from the recipient; wherein it also comprises: a recycling conduit for placing the outlet conduit in communication with the inlet of the fluid; a three-way valve connected at an inlet thereof to the outlet conduit and connected at outlets thereof to the recycling conduit and to the outlet, which three-way valve is provided with an obturator commanded by a pressure exerted by the fluid exiting from the outlet conduit, which obturator blocks a connection between the outlet conduit and the recycling conduit when the pressure reaches a first predetermined value; a one-way valve having an obturator and being located on the outlet downstream of the three-way valve, which one-way valve is normally closed and is commanded by pressure exerted by the fluid outletting from the outlet conduit, which one-way valve connects the outlet conduit with the outlet when the pressure exerted by the fluid reaches a second predetermined value which second predetermined value is above the first predetermined value.

2) The separator of claim 1, wherein the obturator of the three-way valve and

the obturator of the one-way valve are directly actuated by the fluid exiting the outlet conduit.

3). The separator of claim 1, wherein the lid comprises a first chamber constituting the body of the three-way valve, internally of which a calibrated float can slide in an axial direction, which float constitutes the obturator of the valve and which can assume: a first position, in which the obturator closes the inlet of the three-way valve, when there is no flow of fluid inletting from the outlet conduit; a plurality of second positions, in which the obturator opens both the inlet and the outlets of the three-way valve, when a flow of fluid arriving from the outlet conduit exerts on the obturator a pressure which is lower than the first predetermined pressure; a third position, in which the obturator opens the inlet and the outlet connected to the outlet of the three-way valve and closes the outlet of the three-way valve connected to the recycling conduit when the flow of fluid arriving from the outlet conduit exerts on the obturator a pressure which is superior to the first predetermined pressure.

4) The separator of claim 3, wherein the calibrated float constituting the obturator is a metal cylinder having two truncoconical ends.

5). The separator of claim 3, wherein the first chamber comprises: a channelled housing, directly connected to the inlet and the outlet of the three-way valve, internally of which the obturator of the three-way valve can slide without a seal; an annular chamber which is always connected with an inside of the channelled housing and with the outlet of the three-way valve.

6). The separator of claim 2, wherein the lid comprises a second chamber, constituting the body of the one-way valve, internally of which the obturator of the one-way valve can slide and assume: a first position in which the obturator closes the one-way valve, which first position is maintained by a calibrated elastic element as long as a pressure of the fluid flow coming from

the outlet conduit falls below the second predetermined value; a second position, in which the obturator opens the one-way valve, when the pressure of the fluid flow coming from the outlet conduit rises above the second predetermined value.

7). The separator of claim 6, wherein projecting guides are located on an internal wall of the second chamber, which projecting guides guide a sliding of the obturator without preventing passage of the fluid.